

WHAT IS CLAIMED IS:

1. An apparatus for detecting chemical agents comprising:

a sample introduction unit for introducing a test sample;

an ion source for positively ionizing an introduced sample by corona discharge;

a mass spectrometer unit for analyzing the mass of said sample ionized by said ion source; and

a measurement process unit for measuring ions separated by the mass spectrometer unit, and for, on the basis of measurement results, deciding whether said test sample is a chemical agent to be detected.

2. A detection apparatus according to Claim 1, wherein a decision in said measurement process unit is made by detecting a signal arising from said chemical agent to be detected.

3. A detection apparatus according to Claim 1, wherein a decision in said measurement process unit is made by monitoring the strength of ions derived from said chemical agent to be detected.

4. A detection apparatus according to Claim 1, wherein a decision in said measurement process unit is made by monitoring the strength of ions having a value of m/z (mass-to-charge ratio) derived from said chemical agent to be detected.

5. A detection apparatus according to Claim 4, wherein said measuring process unit includes a database

having said value of m/z stored therein.

6. A detection apparatus according to Claim 5, wherein said value of m/z is 99 and 141.

7. A detection apparatus according to Claim 5, wherein said value of m/z is 99, 183, and 365 and wherein said decision is made by at least two of those values.

8. A detection apparatus according to Claim 1, wherein said ion source has a needle electrode and an opposite electrode for generating corona discharge.

9. A detection apparatus according to Claim 8, wherein a sample introduced from said sample introduction unit is made to flow from said opposite electrode towards said needle electrode.

10. A detection apparatus according to Claim 9, wherein said opposite electrode has an opening, and said sample introduced from said sample introduction unit is guided through said opening to said ion source, and is made to flow towards said needle electrode, and discharged to the outside by suction pump.

11. A detection apparatus according to Claim 9, wherein in a process that primary ions generated by corona discharge occurring between said needle electrode and said opposite electrode are moved towards the opening of said opposite electrode, ions generated by an ionizing reaction of said sample with said primary ions are sent through said opening of said opposite electrode to said mass spectrometer unit.

12. A detection apparatus according to Claim 1, wherein said ion source uses atmospheric pressure chemical ionization.

13. A detection apparatus according to Claim 1, wherein the temperature of said ion source is set at 150°C or lower.

14. A detection apparatus according to Claim 1, wherein in a differential exhaust portion of said mass spectrometer unit, a drift voltage of 30V~90V is applied between an electrode 37a with an orifice on the ion entrance side of said differential exhaust portion and an electrode 37b with an orifice on the ion outlet side of said differential exhaust portion.

15. A detection apparatus according to Claim 1, wherein said chemical agent to be detected is isopropyl methylphosphonofluoridate or pinacolyl methylphosphonofluoridate.

16. An apparatus for detecting a chemical agent comprising:

a sample introduction unit for introducing, heating and vaporizing a test sample;

an ion source for ionizing a sample vaporized in said sample introduction unit by corona discharge;

a mass spectrometer unit for analyzing the mass of ions generated by said ion source; and

a measurement process unit for measuring said ions separated by said mass spectrometer unit, and for determining whether or not said test sample is a

chemical agent to be detected based on a measured result.

17. A method for detecting a chemical agent comprising the steps of:

ionizing a test sample introduced by corona discharge to thereby generate ions;

performing analyzing the mass of generated ions; and

measuring ions analyzed by mass spectrometry and determining based on a measured result whether or not said sample is a chemical agent to be detected.

18. A method for detecting a chemical agent comprising the steps of:

heating and vaporizing a test sample introduced;

ionizing a vaporized test sample by corona discharge to thereby generate ions;

performing analyzing the mass of generated ions; and

measuring ions analyzed by mass spectrometry and determining based on a measured result whether or not said vaporized sample is a chemical agent to be detected.